

REDISCOVERY OF *BUNIAM MICROCARPUM* SUBSP. *LONGIRADIATUM* (APIACEAE) ENDEMIC TO CUDI MOUNTAIN/ŞIRNAK (TURKEY)

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ABSTRACT. *Bunium microcarpum* (Boiss.) Freyn & Bornm subsp. *longiradiatum* Hedge & Lamond is restricted endemic to Cudi Mountain/Şırnak (Turkey). First collected in 1966 from one locality by Davis from Cudi Mountain (Silopi), but did not collected until 2019. Recently it was recollected for the second time from its type locality. The revised description and mature fruit sizes of *B. microcarpum* subsp. *longiradiatum* are given for the first time. In addition, habitus and habitat photographs and distribution map of this subspecies has been given.

1. INTRODUCTION

SW Asia and especially Turkey are diversity centers of the Apiaceae. Two endemic genera and more than 169 endemic species and subspecies are distributed in Turkey. The family Apiaceae comprises 100 genera and 477 species (505 taxa) in Turkey and 167 taxa are endemic [1]. The genus *Bunium* (Apiaceae) comprises about 50 species of geophytes with tuberiform storage roots, distributed in the arid and subarid SW and central Asia, Europe, and North Africa [2]. The center of diversity of *Bunium* is in the Mediterranean region. In Turkey, there are sixteen known species, including four endemics [3]. The most recent classification of *Bunium* was elaborated by Kljuykov [4] who based his treatment on the chromosome number, embryo features and other characters. Six sections and 15 subsections were recognized, and they were subsequently partly supported by the molecular phylogenetic analysis [2].

During floristic surveys at Cudi Mountain (Silopi/Cizre) (Figure 1), from may to July 2017, some interesting *Bunium* specimens were collected. To determine those specimens, a wide range of literatures [e.g. 5-7] were used. Finally, collected *Bunium* materials were identified as *Bunium microcarpum* (Boiss.) Freyn & Bornm subsp. *longiradiatum* Hedge & Lamond which was firstly described from Cudi Mountain (Şilopi/Cizre).

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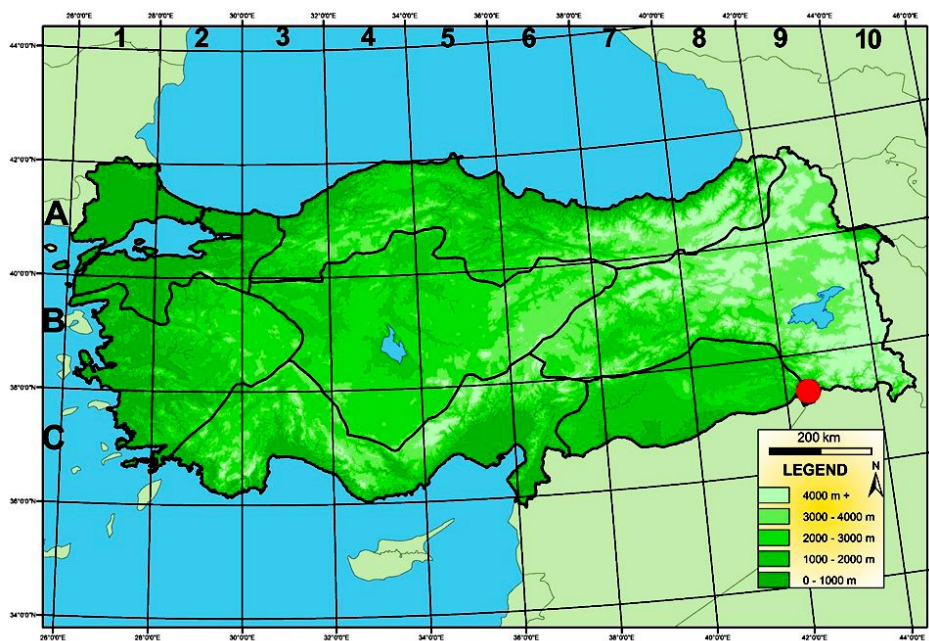


FIGURE 1. Geographical distribution of *Bunium microcarpum* subsp. *longiradiatum* (●) in Turkey.

2. MATERIAL AND METHOD

Photos of the living material were taken with a Sony DSCR1 digital camera. Accessions were georeferenced using a Magellan eXplorist 710 GPS. A total of 10 herbarium specimens of the species were collected from one adjacent localities and deposited in the herbaria VANF [8] and in the personal herbarium of the author (private Herbarium of Mehmet Firat).

3. RESULTS AND DISCUSSION

Taxonomy

Bunium microcarpum (Boiss.) Freyn & Bornm subsp. *longiradiatum* Hedge & Lamond (Figures 2–4)

Type specimens: Turkey C9 Mardin, Cudi Da. above Hessana, 1200-1400 m, Davis 42840 (holo. E, Photo: Virtual herbarium E00000459!) (Figure 2 A).

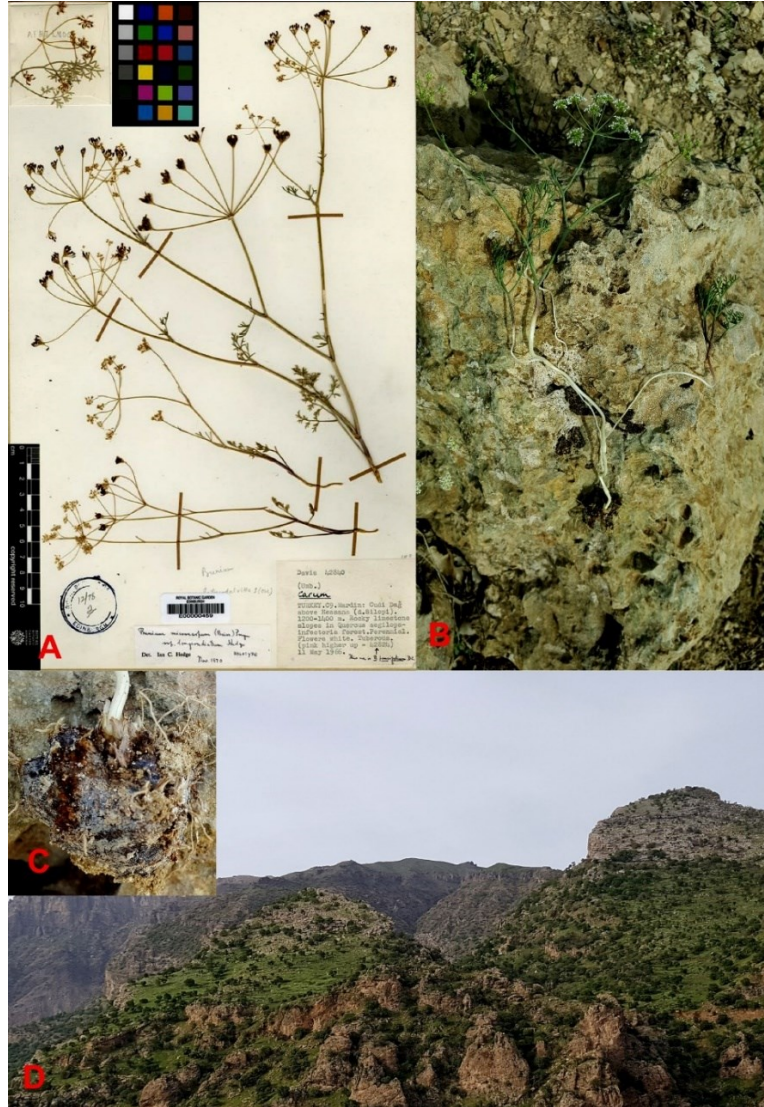


FIGURE 2. *Bunium microcarpum* subsp. *longiradiatum*; A– holotype (E, Photo: Virtual herbarium E00000459!), B– Habit, C– Tuber, D– Habitat

Emended description: Prostrate, ascending or erect perennial, glabrous throughout, from tuber-like thickened root; tubers globose, c.1cm in diam. Stems, terete, finely ridged, 1–2 mm in diam. at base, branched from base; 12–30 cm. Basal leaves with thin and long petioles, to 12 cm long; leaf blades bipinnatisect, to 3 cm long, 2 cm broad, triangular in outline; ultimate segments linear, 2–6 x 0.5–1.5 mm, acute. Lower cauline leaves with sheaths 0.5–1 cm long, narrowly white–membranous at margin, 2-pinnate, 4–9 x 1–3 cm (inc. petioles). Upper cauline leaves few, 1-2-pinnate, with prominent sheathing petioles or reduced to lanceolate-linear sheaths. Rays 7-10, spreading, ascending to erect, unequal, 3–6 cm. Bracts 0–4, white–membranous at margin, 1–4 x 0.5–1.5 mm. Pedicels 10–16 per umbellule, unequal, 2–5 mm. Bracteoles 2–6, 1–3 x 0.4–0.6 mm. Petals white, apex incurved, c. 0.5 mm long. Fruits oblong to oblong-elliptic, glabrous, 2.5–3.7 x 1–2 mm; styles 0.5–0.8 mm, spreading to deflexed: stylopodium conical. Vallecular vittae 1; commissural 2.

Key to Flora of Turkey *Bunium microcarpum* subspecies

1. Rays of fruiting umbels 4-5.5 cm; ultimate lobes of middle cauline leaves c. 5 mm.....**subsp. longiradiatum**
1. Rays of fruiting umbels up to 3 cm; ultimate lobes of cauline leaves more than 5mm
2. Fruits oblong or oblong-linear, 3–3.5 mm.....**subsp. bourgaei**
2. Fruits ovoid, c. 2.5 mm.....**subsp. microcarpum**

Phenology: Flowering time May and fruiting from June to July

Distribution: *Bunium microcarpum* subsp. *longiradiatum* is only distributed from Cudi mountain (Silopi/Şırnak) Turkey. According to the grid system Davis the species, falls specifically within the C9 square. It is growing type locality Cudi mountain (Silopi/Şırnak) Turkey.

Habitat and ecology: *Bunium microcarpum* subsp. *longiradiatum* grows in *Quercus* sp. and *Juniperus* sp Limestone slopes, at c. 1100–1400 m. It is associate with other plants such as; *Juniperus* sp., *Galium* sp., *Bromus* sp. and *Poa* sp. *Bunium paucifolium* var. *paucifolium*

Vernacular name: *Bunium microcarpum* subsp. *longiradiatum* is called Kurdish name “Xîlxîloşk” by the local people of the Silopi province. The other *Bunium* species are known by the local people under many names in Kurdish; e.g. “Çavreşok”, “Kimî”, “Kizbelok”, “Kurdek”, “Şemok”, “Şelîlok”, “Xîlok”, “Xumxumik” “Poşmê”, and in Turkish; e.g. “Tavşan kapağı” [9].



FIGURE 3. *Bunium microcarpum* subsp. *longiradiatum*; **A, B**– Habit, **C**– Upper cauline leaves, **D**– Basal leaves

Examined material: *Bunium microcarpum* subsp. *longiradiatum*. Turkey. C9 Şırnak, Silopi district, Cudi mountain, Above Hessena, Limestone slopes, *Juniperus* sp. and *Quercus* sp. forest, 971 m, 08.05.2015, *M. Firat* 33745 [(VANF, Herb. M. Firat), (in flower)]; ibid. 16.07.2015, *Firat* 33893 [(VANF, Herb. M. Firat), (in fruit)].

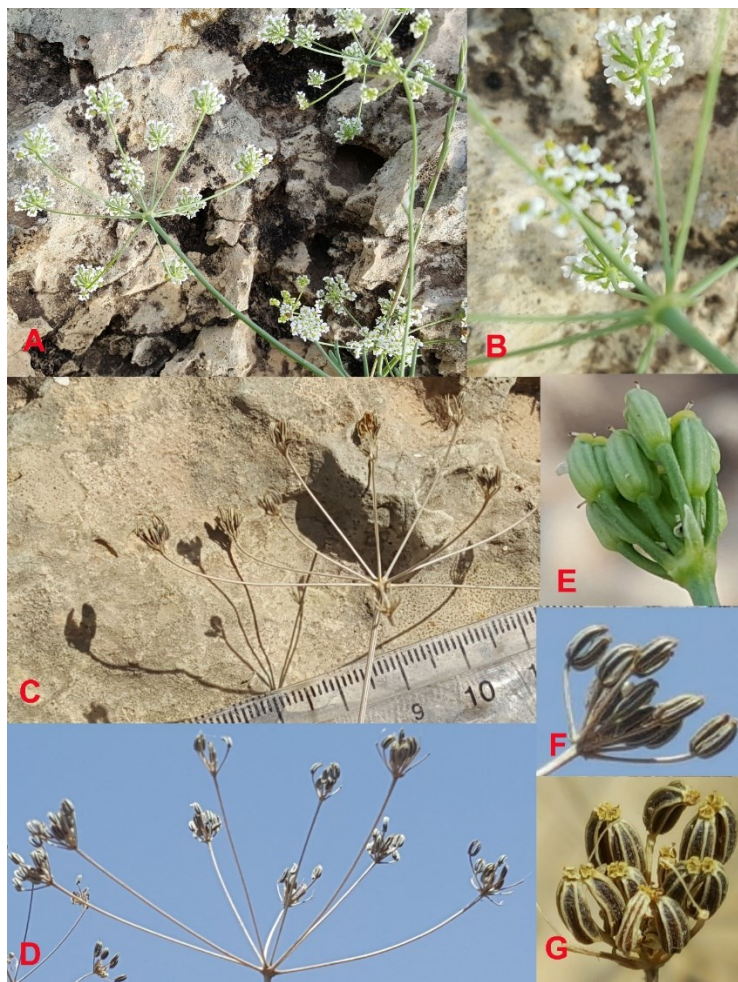


FIGURE 4. *Bunium microcarpum* subsp. *longiradiatum*; **A, B**– Umbellule at flower, **C, D**– Umbellule at mature fruits, **E**– Detail young fresh fruits, **F, G**– Detail mature fruits

COMMENTS

Bunium microcarpum subsp. *longiradiatum* is an endemic species that is known from just type localities. In addition to the revised description, mature fruit sizes are given for the first time (mature fruits oblong to oblong-elliptic, glabrous, 2.5–3.7 x 1–2 mm; styles 0.5–0.8 mm, spreading to deflexed; stylopodium conical. Vallicular vittae 1; commissural 2). Despite the investigations until today, there was found no trace of this species in the nature, and thus it has been evaluated as Endangered (EN) according to IUCN (Red List Categories and Criteria) [10]. With this study, the species was recollected 53 years later and photos of this species were taken for the first time in their habitat.

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